

Amendment dated

Reply to Office Action of February 10, 2009

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) An intercalate, capable of being exfoliated, formed by contacting a layered phyllosilicate material with an intercalating composition including an intercalant, without prior sorption of an onium ion spacing agent, wherein the intercalant is a monomer, oligomer or polymer surface modifier that is a reaction product of at least one diamine and at least one dicarboxylic acid, said reaction product having at least one amine group that is protonated for ion-exchange with an interlayer cation of the layered material, to achieve ion-exchange of the protonated amine group of the intercalant surface modifier with the interlayer cation of the layered material, between adjacent spaced layers of the layered material, to expand the spacing between a predominance of the adjacent platelets of said layered material at least about 5 Å, when measured after sorption of intercalant surface modifier; said intercalate being combined with a polyamide matrix polymer having an amine group that is the same as an amine group of said diamine reacted to form said surface modifier.

2. (Currently Amended) An intercalate in accordance with claim 1, wherein the intercalant contacts the layered phyllosilicate material to form an intercalating composition, and the concentration of intercalant surface modifier in said intercalating composition is at least about 0.1% by weight, based on the weight of water, organic solvent for the surface modifier and intercalant monomer surface modifier in the intercalating composition.

3. (Currently amended) An intercalate in accordance with claim 42, wherein the intercalant is an oligomer and the concentration of the intercalant surface modifier in said intercalating composition is at least about 15% by weight, based on the dry weight of the phyllosilicate in the intercalating composition.

4. (Currently amended) An intercalate in accordance with claim 3, wherein the concentration of the intercalant surface modifier in said intercalating composition is at least about 20% by weight, based on the dry weight of the phyllosilicate in the intercalating composition.

5. (Original) An intercalate in accordance with claim 4, wherein the concentration of the intercalant surface modifier in said intercalating composition is at least

Amendment dated

Reply to Office Action of February 10, 2009

about 30% by weight based on the dry weight of the phyllosilicate in the intercalating composition.

6. (Original) An intercalate in accordance with claim 5, wherein the concentration of the intercalant surface modifier in said intercalating composition in the range of about 50% to about 80% by weight.

7. (Canceled)

8. (Original) An intercalate in accordance with claim 3, wherein the concentration of the intercalant surface modifier in the intercalating composition is at least about 16% by weight.

9. (Original) An intercalate in accordance with claim 8, wherein the concentration of the intercalant surface modifier in the intercalating composition is in the range of about 16% to about 200% by weight.

10. (Original) An intercalate in accordance with claim 9, wherein the concentration of the intercalant surface modifier in the intercalating composition is in the range of about 16% to less than about 35% by weight.

11. (Original) An intercalate in accordance with claim 9, wherein the concentration of the intercalant surface modifier in the intercalating composition is in the range of about 35% to less than about 55% by weight.

12. (Original) An intercalate in accordance with claim 9, wherein the concentration of the intercalant surface modifier in the intercalating composition is in the range of about 55% to less than about 70% by weight.

13. (Currently Amended) A method of exfoliating a layered silicate material comprising:

contacting the layered silicate material with an intercalating composition comprising at least about 2% by weight of an oligomeric intercalant surface modifier, without prior sorption of an onium or silane coupling agent, wherein the intercalant that is a reaction product of at least one diamine and one dicarboxylic acid, said reaction product

Amendment dated

Reply to Office Action of February 10, 2009

having at least one amine group that is protonated for ion-exchange with an interlayer cation of the layered silicate material, to intercalate the oligomeric intercalant surface modifier between adjacent silicate platelets of the layered silicate material to form an intercalate;

~~combining said intercalate with a polyamide matrix polymer having an amine group that is the same as an amine group of said diamine reacted to form said surface modifier; and~~

separating the platelets of the intercalate.

14. (Currently Amended) The method of claim 13, wherein the intercalate is exfoliated ~~in said polyamide matrix polymer~~ into a predominance of individual platelets.

15 through 17. (Canceled)

18. (Previously presented) A method in accordance with claim 13, wherein the amount of intercalant surface modifier intercalated into the layered silicate material is 10-200% intercalant surface modifier, based on the dry weight of the layered silicate material.

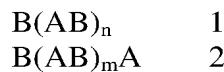
19. (Previously presented) A method in accordance with claim 13, wherein the amount of intercalant surface modifier intercalated into the layered silicate material is about 15% to about 80%, based on the dry weight of the layered silicate material.

20. (Currently Amended) An intercalate, capable of being exfoliated, formed by contacting a layered silicate material with an intercalating composition including an intercalant monomer, oligomer or polymer surface modifier that is a reaction product of at least one diamine and at least one dicarboxylic acid, without an onium ion spacing agent, said reaction product having at least one amine group that is protonated for ion-exchange with an interlayer cation of the layered material, to form an oligomer intercalant surface modifier and to achieve ion-exchange of the protonated amine group of the oligomer intercalant surface modifier with the interlayer cation of the layered material, between adjacent spaced layers of the silicate layered material, to expand the spacing between a predominance of the adjacent platelets of said silicate layered material at least about 5 Å, when measured after sorption of intercalant surface modifier.

Amendment dated

Reply to Office Action of February 10, 2009

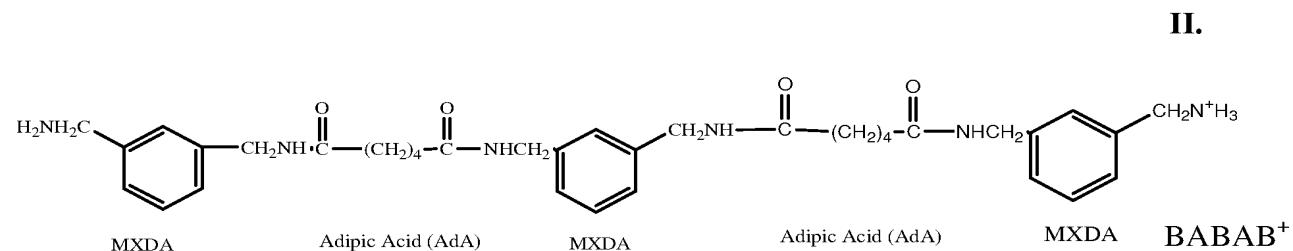
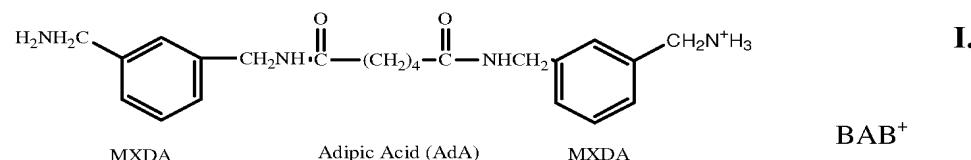
21. (Previously presented) An intercalate in accordance with claim 20, having formula 1 or 2 as follows, wherein "B" represents a xylylenediamine-component-containing Base, and "A" represents a dicarboxylic acid, wherein at least one of the B components includes a protonated amine functionality, and wherein n=1-20; and m=0-20:



22. (Original) An intercalate in accordance with claim 21, wherein B is a xylylenediamine comprising at least 60 mole % m-xylylenediamine.

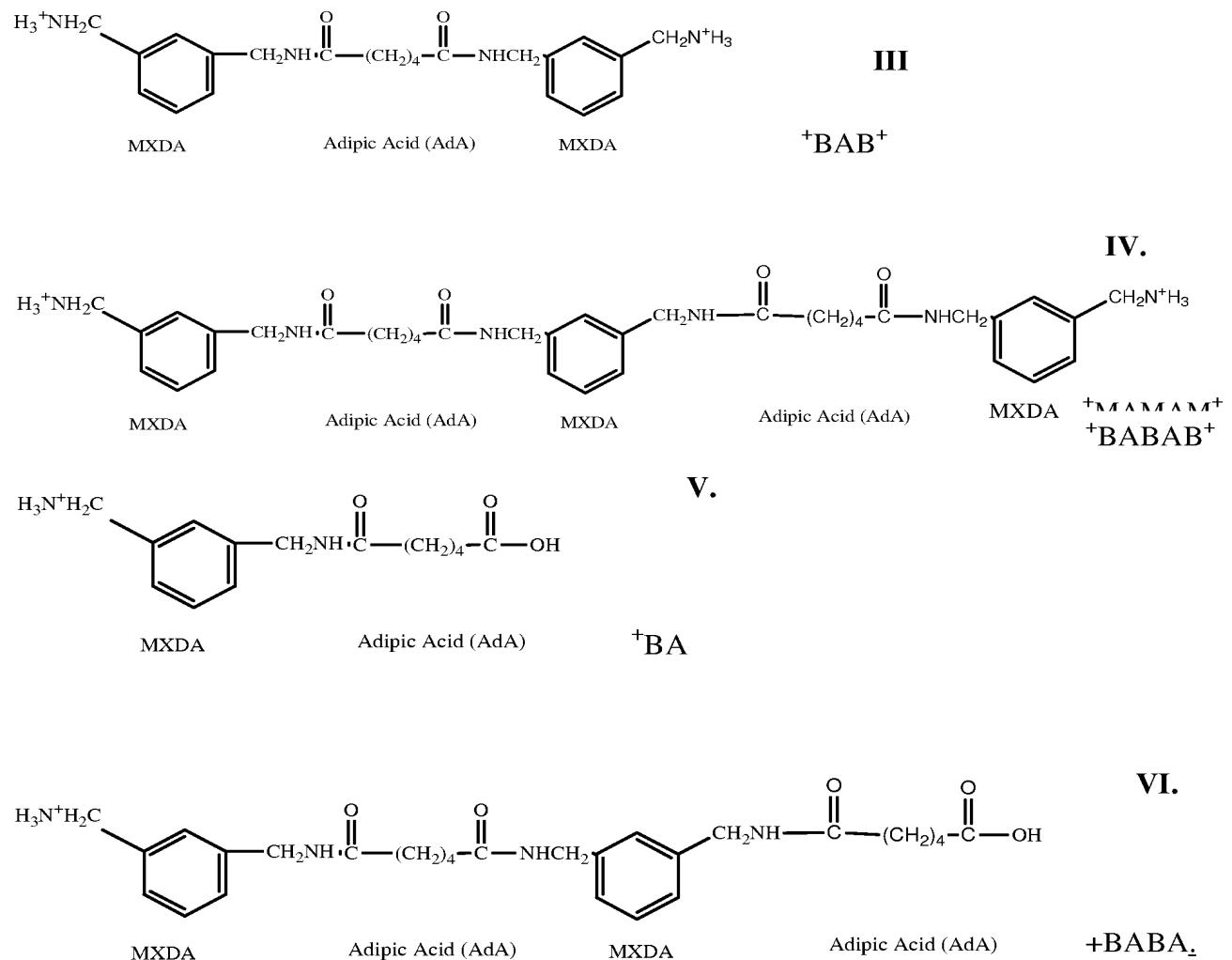
23. (Previously presented) An intercalate in accordance with claim 22, wherein A is selected from the group consisting of adipic acid and succinic acid.

24. (Previously presented) An intercalate in accordance with claim 20, wherein the intercalant has a structural formula I, II, III, IV, V, VI, or a combination of any two or more:



Amendment dated

Reply to Office Action of February 10, 2009



25. (Currently Amended) An intercalate, capable of being exfoliated, formed by contacting a layered silicate material with ~~an intercalating composition~~ including at least one diamine and at least one dicarboxylic acid, polymerized and amine-protonated while in contact with the layered silicate material to form an intercalant surface modifier containing a xylylenediamine component to achieve ion-exchange of the protonated amine group of the intercalant surface modifier with an interlayer cation of the layered material, between adjacent spaced layers of the layered material, to expand the spacing between a predominance of the adjacent platelets of said layered material at least about 10 Å, when measured after sorption of the intercalant surface modifier, said intercalate being combined with a polyamide matrix polymer formed by reacting a dicarboxylic acid with xylylenediamine, without prior sorption of an onium ion or silane coupling agent.

26. (Original) An intercalate in accordance with claim 25, wherein the concentration of the xylylenediamine component in the intercalant surface modifier is at least 50 mole %.

27. (Original) An intercalate in accordance with claim 26, wherein the concentration of the xylylenediamine component in the intercalant surface modifier is at least 70 mole %.

28. (Previously presented) An intercalate in accordance with claim 25, wherein xylylenediamine component in the intercalant surface modifier comprises at least 60 mole % m-xylylenediamine.

29. (Previously presented) An intercalate in accordance with claim 28, wherein the xylylenediamine component in the intercalant surface modifier comprises at least 70 mole % m-xylylenediamine.

30. (Previously presented) An intercalate in accordance with claim 29, wherein the xylylenediamine component in the intercalant surface modifier comprises at least 80 mole % m-xylylenediamine.

31. (Previously presented) An intercalate in accordance with claim 30, wherein the xylylenediamine component in the intercalant surface modifier comprises at least 95 mole % m-xylylenediamine.

32. (Previously presented) An intercalate in accordance with claim 25, wherein the dicarboxylic acid component in the intercalant surface modifier comprises at least 50 mole % alpha, omega-straight chain aliphatic dicarboxylic acid.

33. (Previously presented) An intercalate in accordance with claim 32, wherein the dicarboxylic acid component in the intercalant surface modifier comprises at least 60 mole % alpha, omega-straight chain aliphatic dicarboxylic acid.

34. (Previously presented) An intercalate in accordance with claim 33, wherein the dicarboxylic acid component in the intercalant surface modifier comprises at least 70 mole % alpha, omega-straight chain aliphatic dicarboxylic acid.

Amendment dated

Reply to Office Action of February 10, 2009

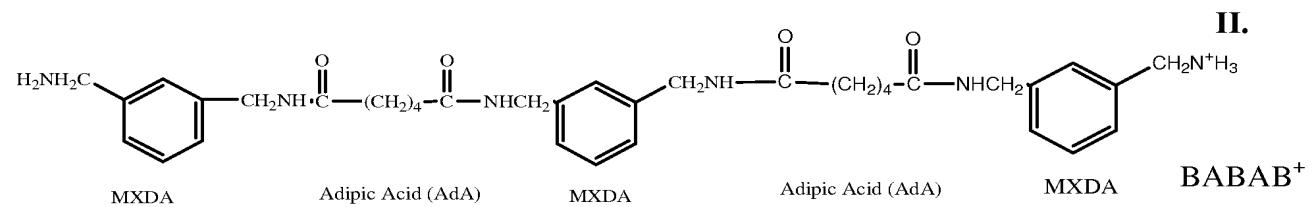
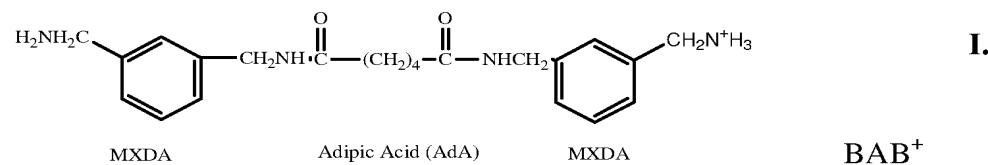
35. (Previously presented) An intercalate in accordance with claim 37, wherein the dicarboxylic acid component in the intercalant surface modifier comprises at least 80 mole % alpha, omega-straight chain aliphatic dicarboxylic acid.

36. (Previously presented) An intercalate in accordance with claim 28, wherein the xylylenediamine component in the intercalant surface modifier comprises up to about 40 mole % p-xylylenediamine.

37. (Previously presented) An intercalate in accordance with claim 32, wherein the alpha, omega-straight chain aliphatic dicarboxylic acid component in the intercalant surface modifier has 6 to 24 carbon atoms.

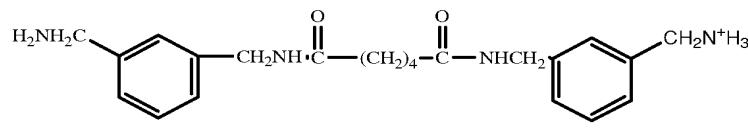
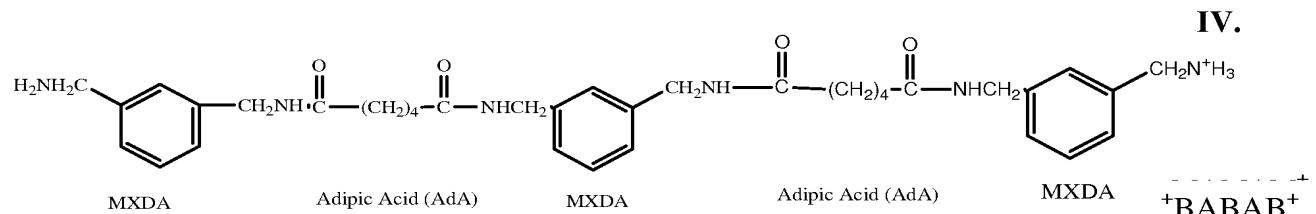
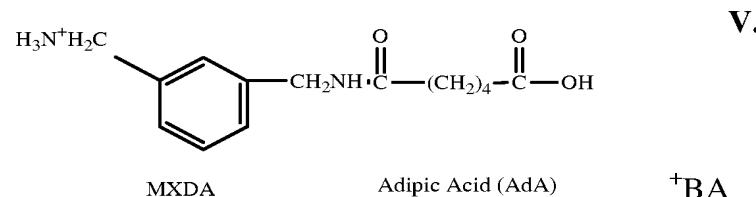
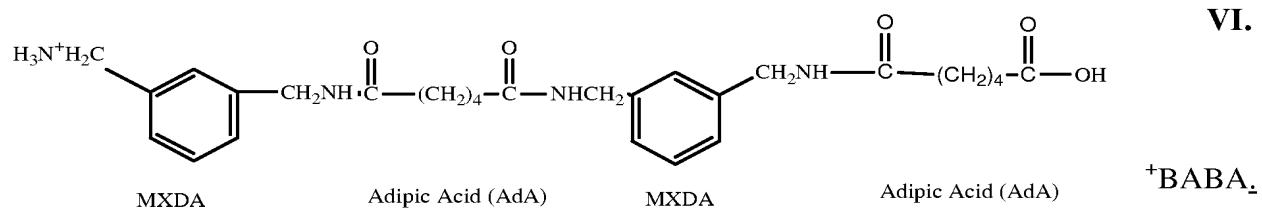
38. (Previously presented) An intercalate in accordance with claim 36, wherein the dicarboxylic acid component in the intercalant surface modifier is selected from the group consisting of adipic acid, sebacic acid, suberic acid, undecanoic acid, dodecanedioic acid, eicosanedioic acid, terephthalic acid, isophthalic acid, and combinations thereof.

39. (Previously presented) A method of exfoliating a layered silicate material in accordance with claim 13, wherein the intercalate is selected from the group consisting of formulas I, II, III, IV, V, VI and a combination of any two or more:



Amendment dated

Reply to Office Action of February 10, 2009

**III.** ${}^+\text{BAB}^+$ **IV.****V.****VI.**

40. (Canceled)